



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/553,692 | 10/18/2005 | Kazuo Tanaka | 125700 | 2007 |
| 25944 | 7590 | 01/25/2008 | EXAMINER | |
| OLIFF & BERRIDGE, PLC P.O. BOX 320850 ALEXANDRIA, VA 22320-4850 | | | | WILLS, MONIQUE M |
| ART UNIT | | PAPER NUMBER | | |
| | | 1795 | | |
| MAIL DATE | | DELIVERY MODE | | |
| 01/25/2008 | | PAPER | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | |
|------------------------------|------------------------------|------------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 10/553,692 | TANAKA ET AL. |
| | Examiner Monique M. Wills | Art Unit 1795 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 01 November 2007.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-12 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-12 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 18 October 2005 is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) Notice of Informal Patent Application
- 6) Other: _____

DETAILED ACTION

Response to Amendment

This Office Action is responsive to the Amendment filed November 1, 2007. The rejection of claim 4, under 35 U.S.C. 112 second paragraph is overcome.

However, the following rejections are maintained:

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

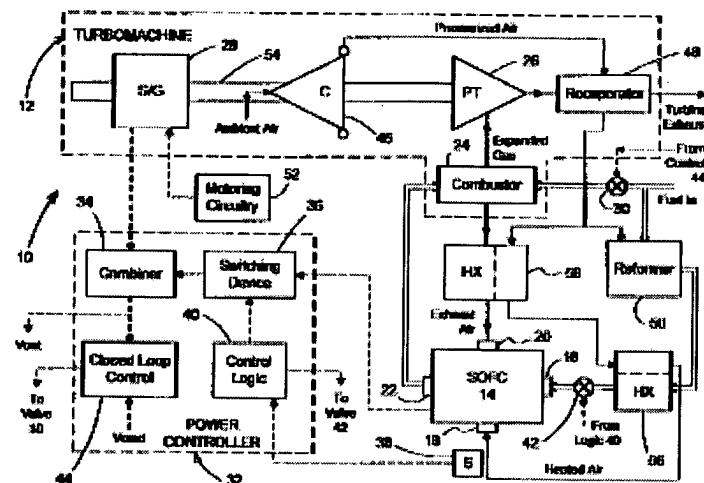
A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, 7 & 9-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Wolfe et al. U.S. Patent 5,968,680.

With respect to claim 1, Wolfe teaches: a fuel cell-atmospheric-pressure turbine hybrid system comprising: a combustor (24) for burning an exhaust gas discharged from an atmospheric-pressure, high-temperature fuel cell (14); a turbine (26) in which a combustion gas discharged from the combustor expands and the pressure of the combustion gas drops to a negative pressure; a compressor (46) for compressing an exhaust gas discharged from the turbine to increase the pressure of the exhaust gas; and a heat exchanger (58 or 56) for transferring heat from the high-temperature exhaust gas discharged from the turbine to low-temperature air to be supplied to the fuel cell. The limitation with respect to the compressor " compressing an exhaust gas discharged from the turbine to increase the pressure of the exhaust gas" is an intended use. It has been held that a recitation with respect tot the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. Ex Parte Masham, 2 USPQ F.2d 1647 (1987). Therefore, the limitations are satisfied, as the compressor is capable of performing said functions. See Figure 1.

FIGURE 1



With respect to claim 3, a cooling device (58) disposed below (down stream) of the heat exchanger (56) to cool an exhaust gas discharged from the heat exchanger (56). See Figure 1.

With respect to claim 7, a fuel supply device for supplying a fuel other than the cell exhaust gas to the combustor is controlled from valve 30. See Figure 1.

With respect to claim 9, the fuel cell system comprises: a combustor (24) for burning a cell exhaust gas discharged from an atmospheric-pressure, high-temperature fuel cell (14); a turbine (26) in which a combustion gas of a pressure substantially equal to the atmospheric pressure discharged from the combustor expands and the pressure of the combustion gas drops to a negative pressure; a compressor (46); and an air supply line through which air is supplied to the combustor. See Figure 1. The limitation with respect to the

compressor “ compressing an exhaust gas discharged from the turbine to increase the pressure of the exhaust gas” is an intended use. It has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex Parte Masham*, 2 USPQ F.2d 1647 (1987). Therefore, the limitations are satisfied, as the compressor is capable of performing said functions. See Figure 1.

With respect to claim 10, a second heat exchanger (56 or 58) is supplied and is capable of transferring heat of an exhaust gas discharged from the turbine to an exhaust gas discharged from the compressor. The heat exchanger is capable of performing the intended use and therefore satisfies the instant claim limitations.

Therefore, the instant claims are anticipated by Wolfe.

Claim Rejections – 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary

skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4 & 8 rejected under 35 U.S.C. 103(a) as being unpatentable over Wolfe et al. U.s. Pat. 5,986,680.

Wolfe teaches the fuel cell system as described in the rejection recited hereinabove.

Wolfe does not expressly disclose a second compressor disposed coaxially with the compressor to compress exhaust gas or a second cooler for cooling the exhaust gas to be supplied to the second compressor (claim 4). The reference is also silent to a second turbine capable of burning a fuel and an exhaust gas discharged from the second turbine and supplying a combustion gas to the first turbine (claim 8).

However, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to employ the second compressor, cooler and turbine, it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. St. Regis Paper Co. v. Bemis co., 193 USPQ 8. The skilled artisan recognizes that duplicate process maximizes efficiency of operating the fuel cell system.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

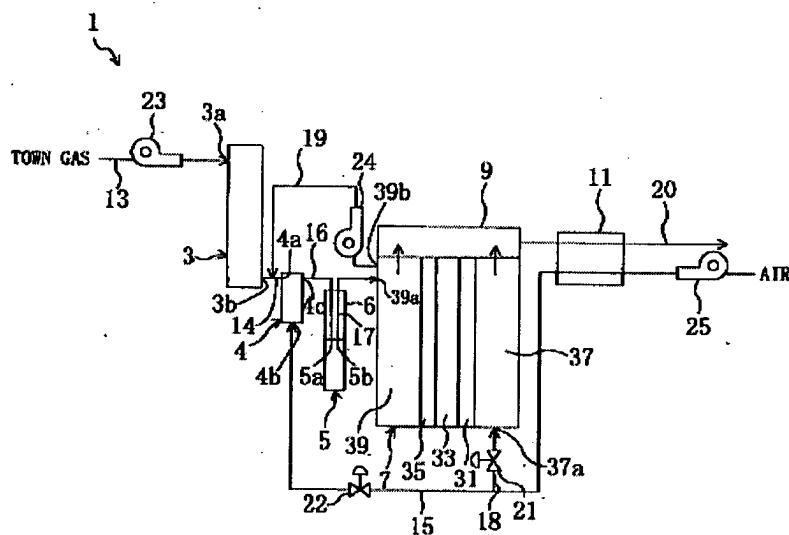
Claims 5-6 & 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolfe et al. U.S. Pat. 5,986,680 in view of Matsui et al. U.S. Pub. 2006/0019139.

Wolfe teaches the fuel cell system as described in the rejection recited hereinabove. With respect to claim 5, Wolfe teaches a recuperator that recovers heat from the exhaust gas discharged from the turbine and supplies fuel to the reformer. See column 3, lines 15-35.

However, Wolfe does not expressly disclose supplying steam from the recuperator/evaporator to the reformer (claim 5); an air intake branch line (claims 6 & 11); or a valve placed in the branch line to adjust the distribution of air to the air supply line and air supply branch line (claim 12).

However Matsui teaches that it is conventional to supply air intake branch lines with control valves to distribute the amount of air in the branch lines (claims 6 & 11-12). See figure 1.

FIG. 1



Therefore, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to employ the air branch line of Matsui in the fuel cell system of Wolfe to maximize the efficiency of air distribution to air demands thought the fuel cell system.

With respect to claim 5, although the recuperator does not supply steam to the reformer, the recuperator is capable of performing said function. Therefore, the intended use statements necessitated by the instant claim have been satisfied.

Response to Arguments

Applicant contends that Wolf is not obvious over or anticipates the instant claims, because Wolf's system teaches that the exhaust gas is discharged to atmosphere from the turbine and the interface with atmosphere is at the turbine output or it can be said at the compressor input because the compressor takes air from the atmosphere. Applicant asserts, "In contrast, the exhaust gas is discharged from the compressor, thus making the atmosphere interface at the compressor output. The novelty of the application over Wolfe exists in this atmosphere interface at compressor output, which enable the combustor and the fuel cell to operate at atmospheric pressure, obviating the need of an emergency protection device and resulting in simple construction. " See Remarks page 7. This argument is not persuasive, as the amendments to the claims further define intended use limitations. Therefore, so long as Wolfe teaches the basic components including a combustor, turbine, compressor and heat exchanger that are capable of performing the instant functions, the limitations of the claims are satisfied.

Conclusion

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Monique Wills whose telephone number is (571) 272-1309. The Examiner can normally be reached on Monday-Friday from 8:30am to 5:00 pm.

If attempts to reach Examiner by telephone are unsuccessful, the Examiner's supervisor, Patrick Ryan, may be reached at 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MW

1/17/08